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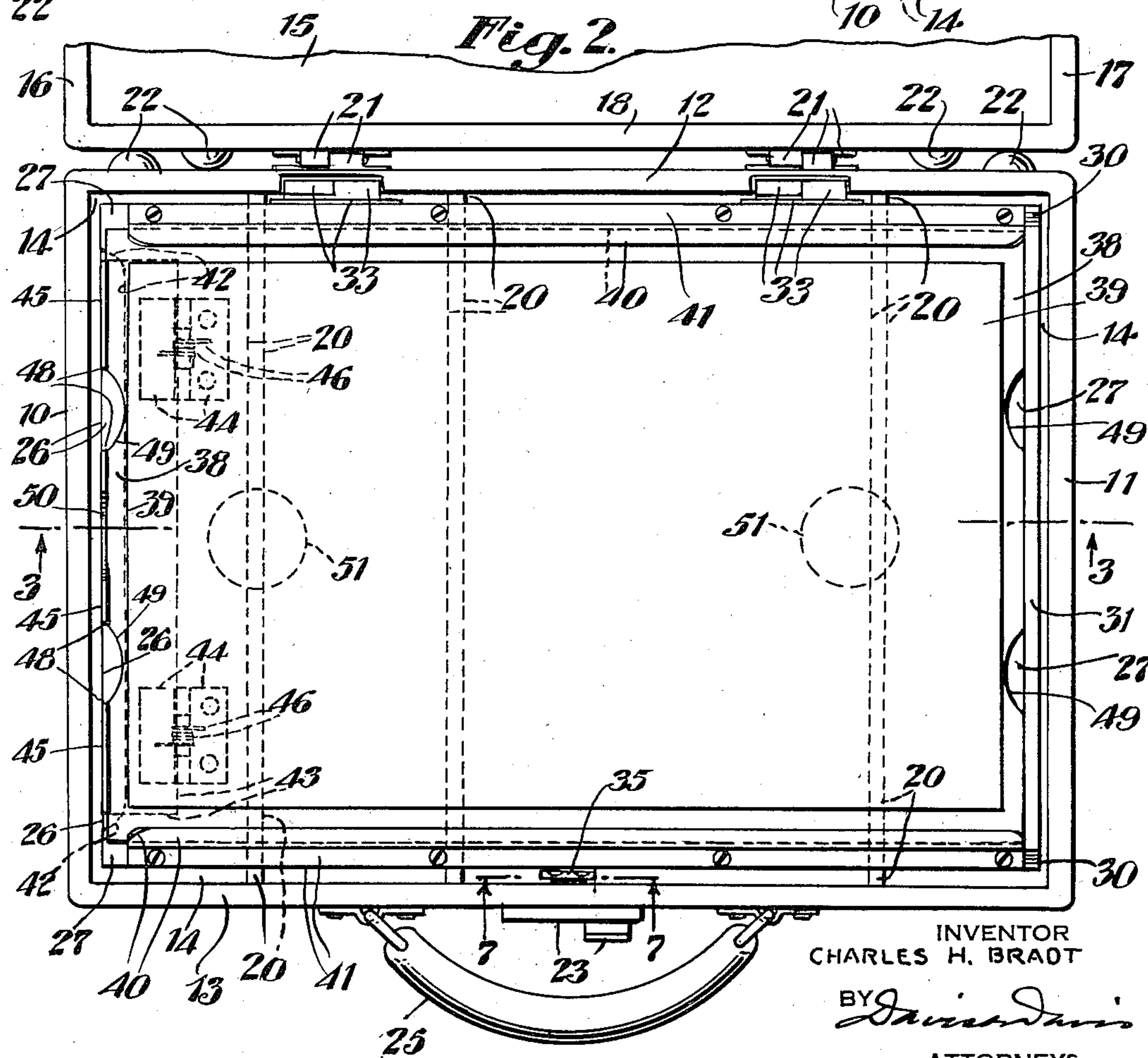
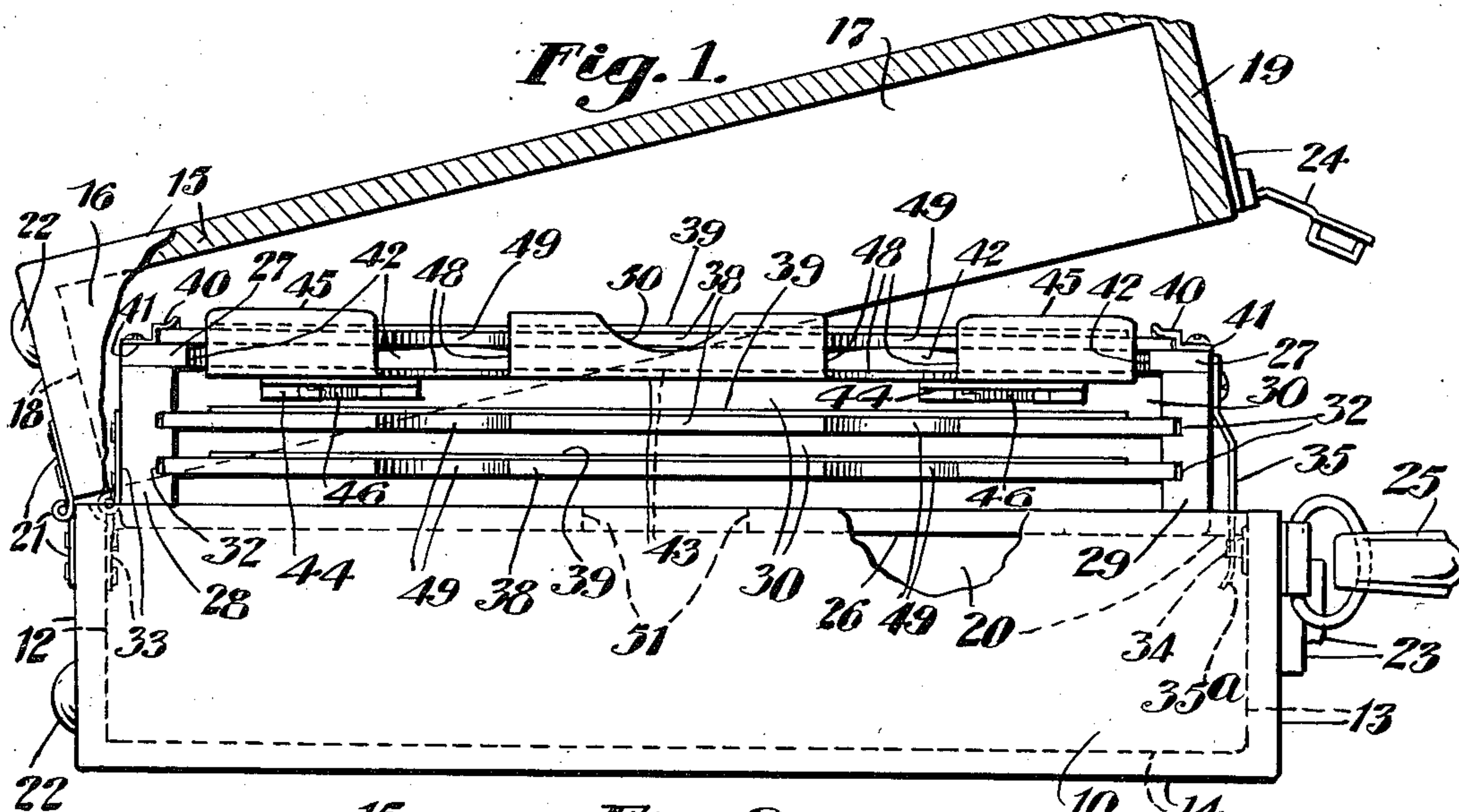
C. H. BRADT

2,011,708

DUPLICATOR

Filed Feb. 24, 1934

2 Sheets-Sheet 1



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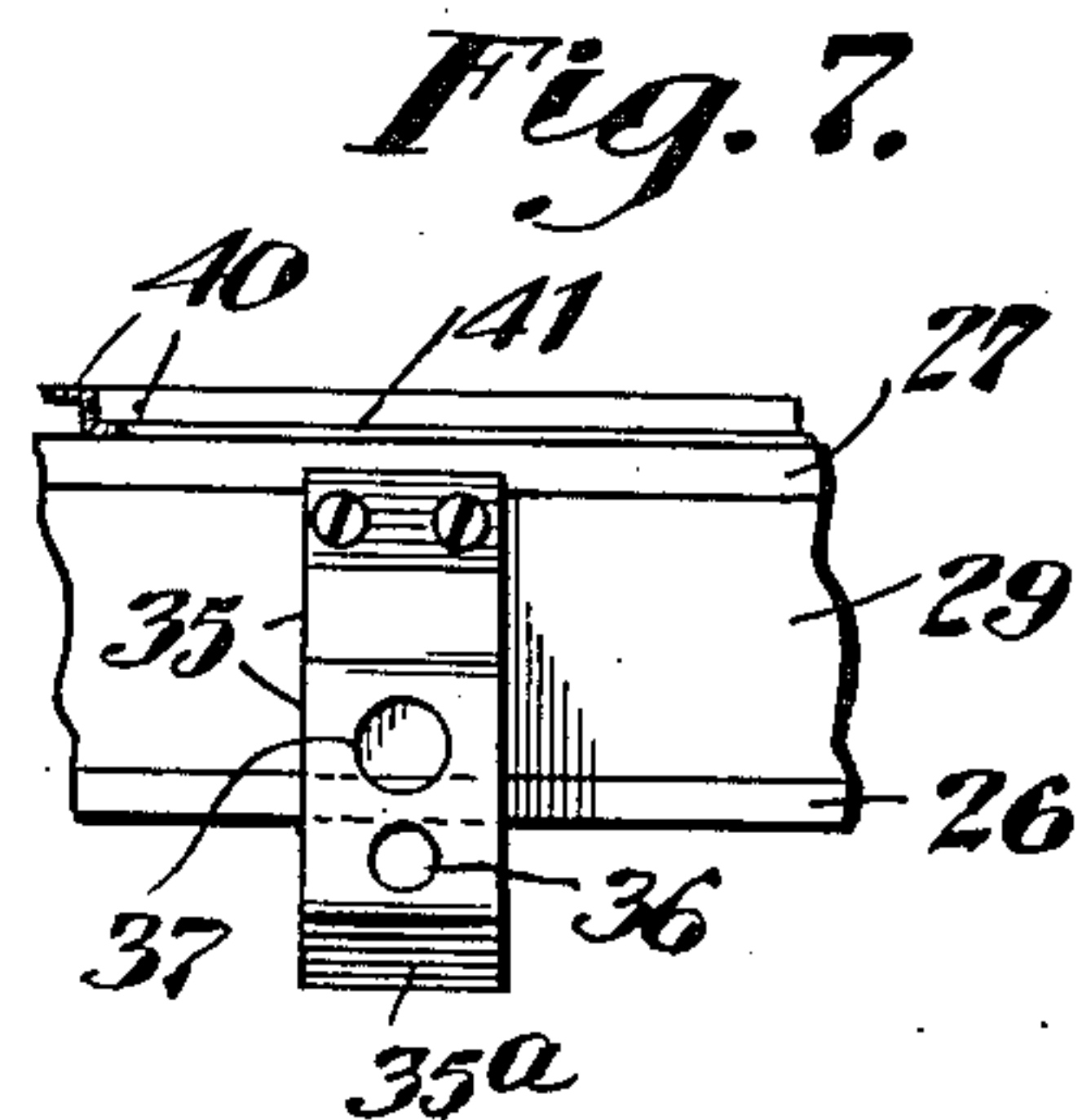
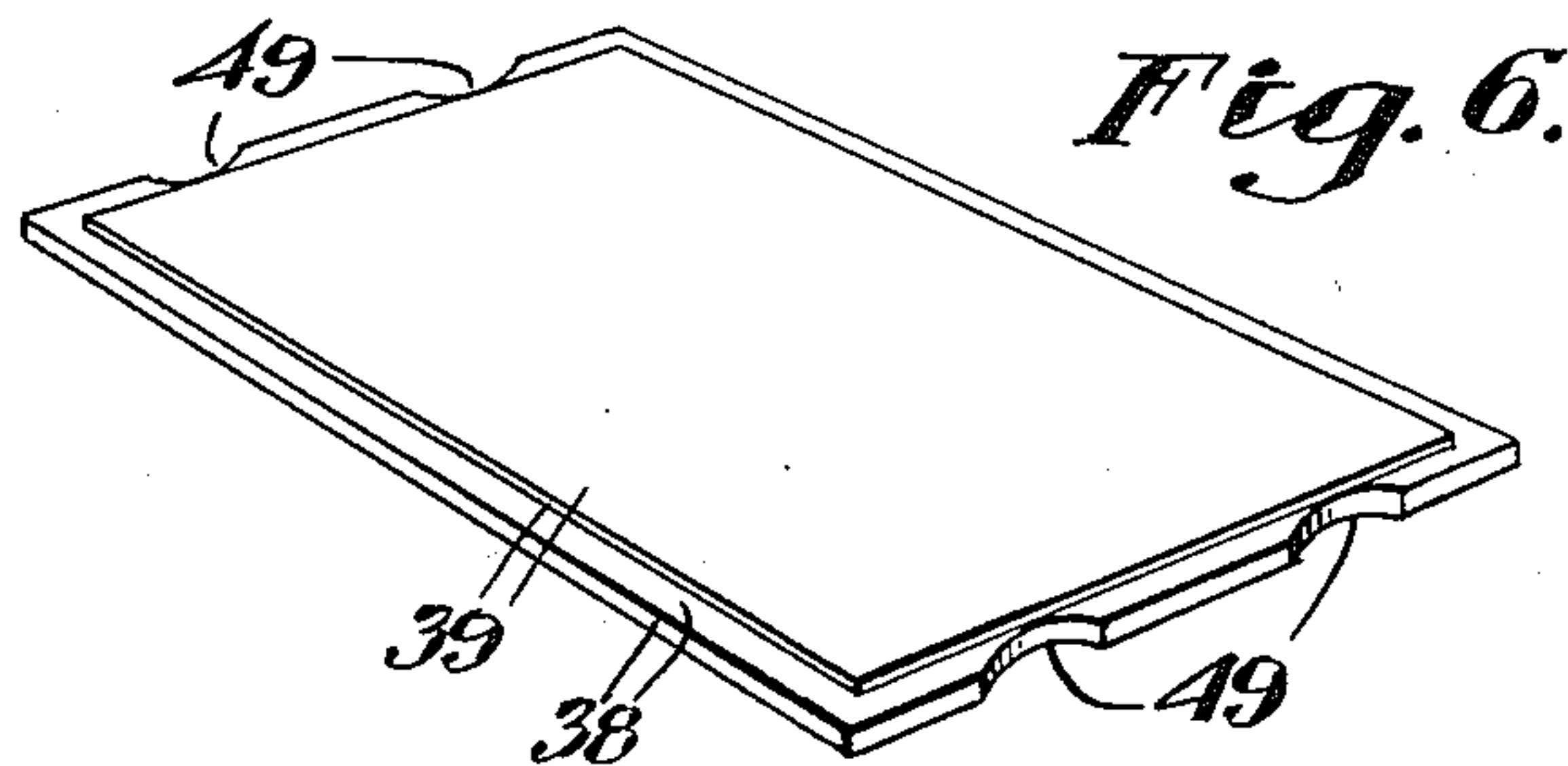
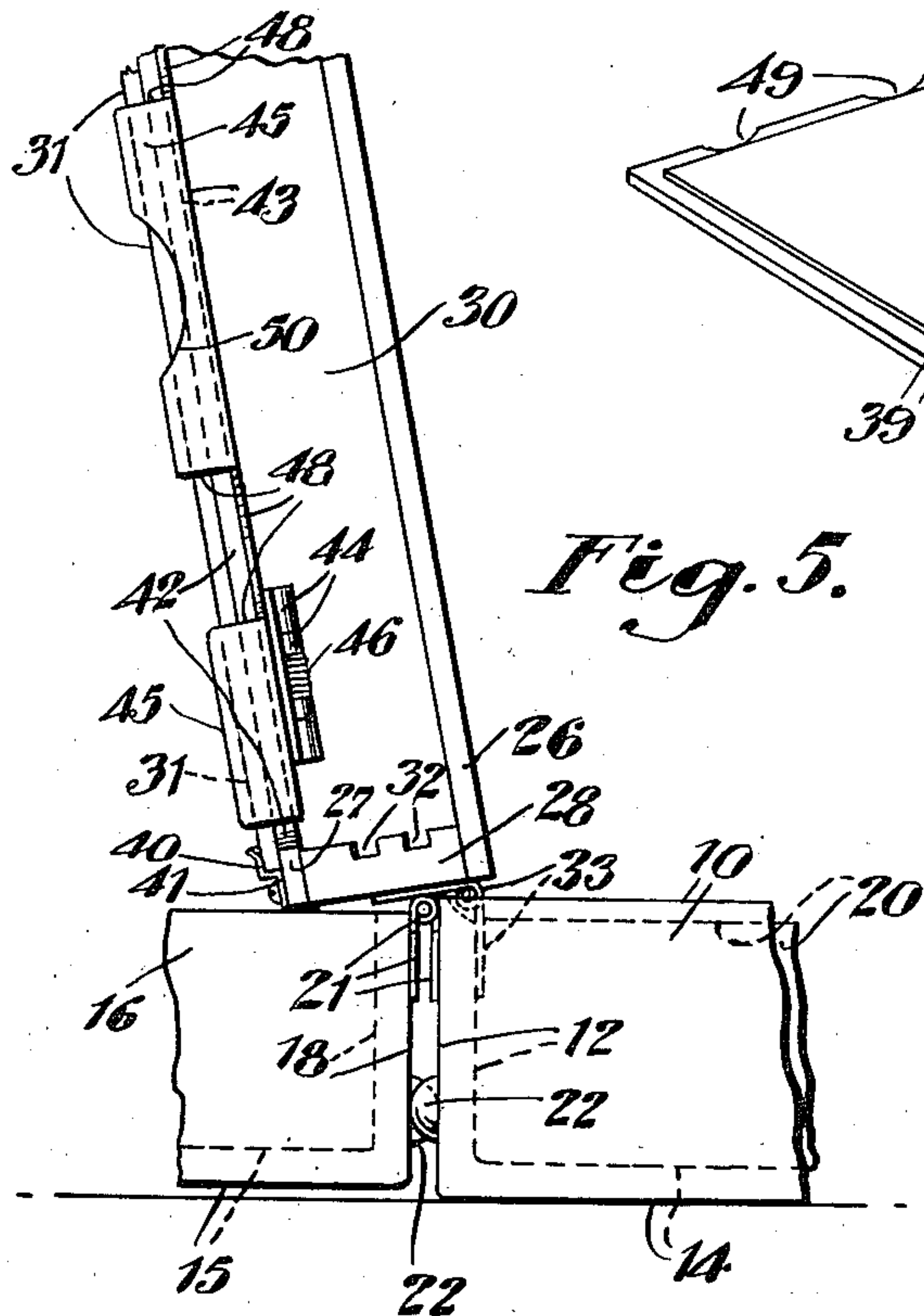
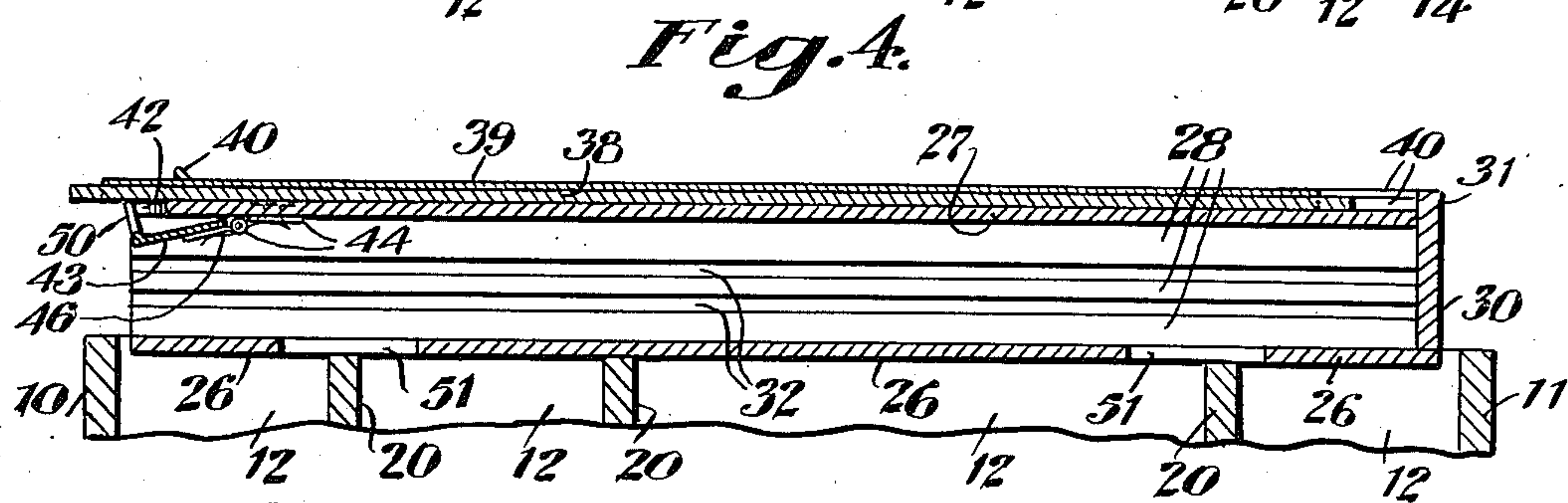
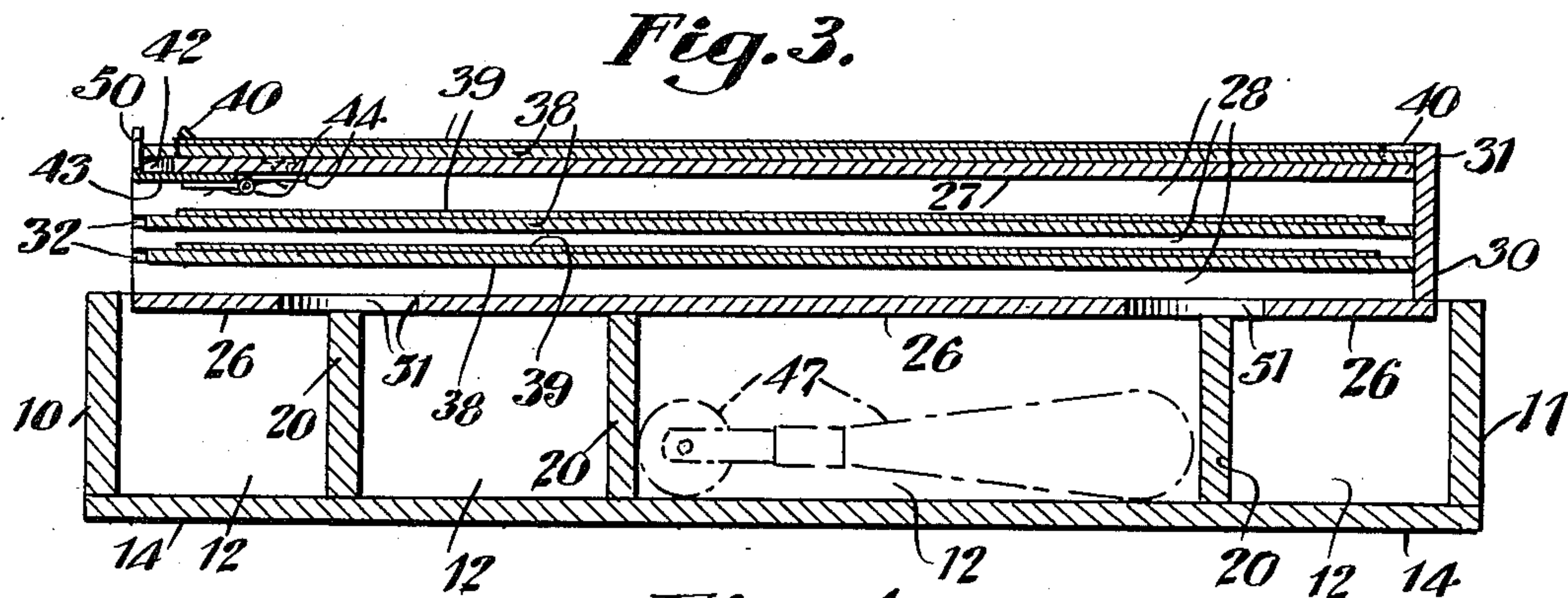
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2 Sheets-Sheet 2



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## UNITED STATES PATENT OFFICE

2,011,708

## DUPLICATOR

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Application February 24, 1934, Serial No. 712,770

10 Claims. (Cl. 101—131)

This invention relates to improvements in duplicators of the hectograph type.

The invention has for its principal objects the provision of an efficient portable and encased hectograph duplicator, and the provision of a simple, compact and inexpensive portable duplicator having hectograph slabs interchangeably usable as the duplicating medium or element of the duplicator, said duplicator having efficient provisions for supporting said slabs and for storage of a supply of paper sheets and of various articles for use in connection with the duplicator, such as a sponge, sponge tray, sheet-laying hand roller, bottles of ink, and the like.

Other objects and advantages of the invention will appear from the following description of the preferred embodiment of the invention illustrated in the accompanying drawings.

In the drawings:—

Fig. 1 is a front end view of the duplicator, the cover element of the casing being shown partly opened and parts of the casing being broken away;

Fig. 2 is a fragmentary top plan view of the duplicator with the cover fully open;

Fig. 3 is a vertical longitudinal sectional view on the line 3—3 of Fig. 2;

Fig. 4 is a view similar to Fig. 3, showing how a hectograph slab is placed upon and removed from the bed of the duplicator, the extra interchangeable slabs being entirely removed to more clearly show the means whereby they are stored beneath the bed;

Fig. 5 is a fragmentary front view of the duplicator, the cover being fully opened as in Fig. 2 and the hinged slab and paper sheet carrying unit being shown swung up and supported in a substantially vertical position;

Fig. 6 is a perspective view of one of the interchangeable hectograph slabs; and

Fig. 7 is a detail sectional view on the line 7—7 of Fig. 2 showing a latch element attached to the hinged unit which carries the slabs and paper sheets.

The enclosing casing of the duplicator comprises a box and a hinged cover for the box. The box has a front end wall 10, a rear end wall 11, side walls 12 and 13, and a bottom wall 14. The cover has a top wall 15, a front end wall 16, a rear end wall 17, and side walls 18 and 19. Three parallel vertical partitions or division walls 20 extend transversely of the box from side wall 12 to side wall 13 and divide the box into four storage compartments. Walls or partitions 20 extend up from the bottom wall of the box and

have horizontal upper edges all lying in a single plane slightly below the level of the upper edges of the side and end walls of the box. A pair of hinges 21 connect the side wall 12 of the box and the side wall 18 of the box cover for swinging of the cover through an arc of 180 degrees from the closed position to the fully open position of the cover, each of the walls 12 and 18 being provided with a longitudinally spaced pair of knobs or projections 22 for abutting the other of said walls to support the fully opened cover in inverted position in a horizontal plane to serve as a paper tray. Walls 13 and 19 of the box and cover are provided with the coactive parts 23 and 24 of a well known form of latch for holding the cover in closed position, said latch being of a kind commonly provided on traveling bags. A suitable carrying handle 25 is attached to wall 13 of the box.

Mounted on the box for enclosure within the casing formed by the box and cover is a hinged box-like unit or smaller inner box having an open front end. This inner box or unit has a bottom wall 26, a top wall 27, longitudinal side walls 28 and 29, and a rear end wall 30. Wall 30 has a reduced upper end portion 31 which projects slightly above the level of the top face of wall 27 for abutment by the rear edge of a hectograph slab. Each of the walls 28 and 29 is provided with a pair of horizontal channels or grooves 32 in its inner face extending from its front edge to the rear wall 30 and forming slide-ways for supporting two hectograph slabs in spaced superposed relation between and spaced from both the top wall 27 and the bottom wall 26 of the inner box.

The inner box is normally seated on the top edges of the partitions 20, the bottom wall of the inner box resting on the partitions with its top face flush with the top edges of the side and end walls of the outer box. The portion of the inner box which projects above the outer box is enclosed within the cover of the outer box when said cover is closed. The inner box is hinged to the outer box to swing upward and sidewise from its normal position through an arc of slightly more than 90 degrees, walls 12 and 28 of said boxes being connected by a pair of hinges 33 whose axes are substantially at the level of the top edge of wall 12. Hinges 33 are opposite hinges 21 and engage the latter as shown in Fig. 5 to support the inner box in an edgewise tilted position which affords free access to the opened inverted cover and to the compartments in the outer box.



The inner box is latched in its normal position by the two engaged elements 34 and 35 of a suitable latch. This latch comprises a fixed pin 34 projecting inward from wall 13 of the outer box and a resilient inwardly flexible arm 35 attached at its upper end to wall 29 of the inner box adjacent the top of the latter box. The free lower end of arm 35 has a downwardly and inwardly inclined cam portion 35<sup>a</sup> adapted to ride over pin 34 as the inner box is swung down on partitions 20, and has an aperture 36 above said cam portion in which pin 34 engages as the outer box reaches its normal position. Arm 35 may be provided with a second aperture 37 indicating a suitable point of application of finger pressure to release the latch.

Three identical interchangeable hectograph slabs are provided, two being supported in storage in the inner box, and the third being detachably held upon the top wall of the inner box for use in making copies. Each slab comprises a rigid flat base 38 oblong in plan and formed of pressboard or other suitable rigid material, and a layer of gelatin or other suitable hectographic material 39 affixed to the upper face of the base but of smaller area than said face so as to leave an exposed marginal portion of the base entirely around the gelatin layer. These slabs are slightly shorter than the inner box and slightly greater in width than the internal width of the box, two of the slabs being enclosed within the inner box into which they are slid with the longitudinal marginal portions of the slabs engaged in the grooves 32 to support the slabs out of contact with each other. The lowermost slab in the box forms a top wall for a compartment for a supply or stack of paper sheets to be used in taking copies, said supply or stack of sheets resting on the bottom wall 26 of the inner box. It will be observed that the opening at the front end of the inner box is entirely exposed for access to the stored slabs and paper sheets when the cover for the outer box is fully opened. The top wall 27 of the inner box forms the bed for the third hectograph slab, to which bed said slab is detachably held against movement in any direction relatively to the bed. The rear end edge of the base of this slab abuts the upwardly projecting end portion 31 of end wall 30 of the inner box, the exposed longitudinal side marginal portions of the slab are slidably confined in slideways formed by inverted L-shaped flanges 40 formed along the inner edges of a pair of sheet metal bars 41 fastened to bed 27 at the top face of the bed and extending along longitudinal marginal portions of the bed substantially the full length of the bed. The horizontal legs of flanges 40 extend inward toward each other and engage the upper faces of the side marginal portions of the slab face, said legs preferably being bent upward slightly at their forward ends as shown.

The bed 27 has a wide notch 42 in its front end edge. At the front end of the bed is a combined slab retainer and sheet-gauging margin bar preferably formed of sheet metal. This retainer and margin bar comprises a flat bar 43 extending transversely of the bed and hinged at its rear edge to the bed beneath the bed and in rear of notch 42 by a pair of hinges 44 to swing up and down about a horizontal axis extending transversely of the bed. Bar 43 has an upstanding flange 45 along its front edge which normally projects up through the open front end of notch 42 above the level of the top gelatin layer of the

slab on the bed, said flange normally abutting the front end edge of the base portion of said slab. Hinge springs 46 normally yieldingly hold the bar 43 engaged flatwise with the lower face of the bed.

In applying a master sheet to the slab held on the bed to transfer a negative to the gelatin surface of said slab, and in applying a clean sheet to said slab to transfer to the sheet a copy from such a negative, the sheet to be applied to the slab is gauged by abutting one end edge thereof with the rear face of the flange 45 of the margin bar where said flange projects above the slab. Preferably the well known hand roller is provided for smoothly laying the gauged sheet upon the slab. When the duplicator is not in use the hand roller may be stored in one of the compartments in the outer box element of the duplicator as indicated at 47 in Fig. 3.

To facilitate stripping of the applied sheet from the slab on the bed, the margin bar is provided with a pair of transversely spaced finger-clearance notches 48 extending rearward through flange 45 and part way through bar 43, both said notches 48 being in vertical register with the wide bed notch 42 and also with a pair of transversely spaced finger clearance notches 49 in the front exposed marginal portion of the base of said slab. The rear marginal portion of the slab has an identical pair of notches 49 identically arranged therein. The interchangeable identical slabs may thus be reversed end for end on the bed. Bed notch 42 permits grasping of the front marginal portion of the slab on the bed centrally of the front edge of the slab to withdraw the slab from the bed when the combined margin bar and slab retainer is depressed. Preferably such grasping of the slab is provided for with a minimum depression of the bar by notching the bar flange 45 as shown at 50 midway the ends of the bar.

A stack of clean copy sheets stored in the inner box may, if desired, be slid part way out of the open end of the inner box for removal one at a time for application to the slab on the bed. Completed copies stripped from the bed may be stacked in the tray formed by the opened cover of the outer box element during the making of a run of copies. The slabs may be readily interchanged for use in making successive runs of copies. The compartments in the outer box afford storage space for the hand roller, bottles of ink, sponge, sponge tray and other articles commonly used with hectograph duplicators.

To facilitate partial or entire removal of stored paper from the inner box, especially short sheets, the bottom wall of the box is provided with two fore-and-aft spaced finger openings 51 accessible by unlatching and swinging up the inner box.

What I claim is:

1. A hectograph duplicator comprising a carrying case, a box in said case and hinged at one side thereof to the case and having an open end, said box having means therein for detachably supporting one or more hectograph duplicating slabs for the withdrawal and insertion of such slabs through said open end of said box while the case is opened and also having means for detachably holding a hectograph duplicating slab to a wall face of said box which is exposed when the carrying case is opened, for use of said last-mentioned slab in making hectograph copies.

2. A hectograph duplicator comprising a box having a cover, a bed adapted to be enclosed by



said box and cover and hinged to the box, means in the box for supporting the bed in parallelism with the box bottom, and means for holding a hectograph slab on the top face of the bed to swing with the bed, said box having storage space therein below the bed, said slab holding means comprising slideways extending longitudinally of the bed, fixed means at one end of the bed for abutting one end of a slab, and shiftable means at the other end of the bed for releasably engaging the other end of the slab.

3. A hectograph duplicator comprising a frame including a bed and storage means therebelow for removably supporting a plurality of hectograph slabs and a supply of paper sheets, means on said frame for detachably holding a hectograph slab on said bed, and an enclosing and carrying case for said frame and means, said case comprising a base section upon which said frame is mounted and a cover section shiftable to uncover said bed and afford access to slabs and sheets supported below the bed by said storage means.

4. A hectograph duplicator comprising a bed, a hectograph slab on said bed, means on said bed forming slideways extending longitudinally of the bed and in which side marginal portions of said slab are engaged, means at one end of the bed abutted by the adjacent end of the slab, a combined slab-retainer and sheet-gauging margin bar at the opposite end of the bed engaging the opposite end of the slab and shiftable supported to permit sliding withdrawal of the slab from the bed, and a carrying case adapted when closed to enclose said bed and means and bar and the slab and upon which case said bed is mounted for supporting the slab for use in making copies when the case is opened.

5. A hectograph duplicator comprising a bed, means extending longitudinally of said bed forming a pair of parallel slideways at opposite sides of the bed for a hectograph slab on the bed, a hectograph slab on said bed engaged in said slideways, means at one end of the bed fixed relatively to the bed and engaging one end edge of the slab, the opposite end of the bed having a notch therein extending under the adjacent end of the slab, a combined slab-retainer and sheet-gauging margin bar pivotally held to the bed beneath the notched end of the bed to swing about an axis extending transversely of the bed and having an upstanding flange normally abutting the adjacent end of the slab and extending above the level of the slab for engagement therewith of one edge of a sheet to be applied to the slab, spring means for yieldingly holding the combined slab-retainer and margin bar rocked into normal position, said bar having a finger clearance notch extending rearward therein and in vertical register with the bed notch, said slab having a finger clearance notch in one end thereof in vertical register with said bar and bed notches, and a carrying case enclosing said bed, means, slab and margin bar and having a section upon which said bed is mounted and which is adapted to support the bed when the case is opened.

6. A hectograph duplicator comprising a box having an open upper end, a second box having an open side and hinged adjacent its bottom to the first box adjacent the top of the first box to swing from and to a horizontal position overlying and spaced from the bottom of the first box, said first box having fixed abutment means therein for supporting the second box in said horizontal position with the open side of the second box un-

obstructed by the first box, said first box having storage space therein below the second box and accessible upon swinging of the second box from said horizontal position, means for removably holding a hectograph slab on the top of the second box for use in making copies, means in the second box for removably supporting therein hectograph slabs for withdrawal and insertion through the open side of the second box, and a box-like cover for the first box hinged to the latter box to swing from a closed position in which said first box and its cover completely enclose the second box to an inverted horizontal position at one side of the first box.

7. A hectograph duplicator comprising a box having an open upper end, a second box having top and bottom walls and open at one side and hinged to the first box to swing from and to a horizontal position overlying and spaced from the bottom of the first box, in which position the open side of the second box is unobstructed by the first box, said first box having fixed means therein engageable by the bottom wall of the second box for supporting the second box in said horizontal position, said first box having storage space therein below the second box and accessible upon swinging of the second box from said horizontal position, means for detachably holding a hectograph slab to the top wall of the second box for use in making copies, means forming slideways in the second box for removably supporting one or more hectograph slabs in the second box for sliding withdrawal through the open side of the second box, means for latching the second box to the first box with the bottom wall of the second box seated on said fixed supporting means in the first box, and a box-like cover for the first box, said first box and its cover being adapted to completely enclose the second box.

8. A hectograph duplicator comprising an outer box; a box-like cover for the outer box hinged to the outer box; vertical partitions in the outer box dividing the outer box into storage compartments; an inner storage box having a top wall, a bottom wall, longitudinal side walls, an end wall and one open end; said inner box being hinged at one longitudinal side thereof to one longitudinal side wall of the outer box for seating of the bottom wall of the inner box on the tops of the partitions in the outer box; said partitions supporting the inner box with its open end completely accessible when the hinged cover of the outer box is opened; said inner box being swingable about its hinge axis, while said cover is open, to afford access to the storage compartments in the outer box; and a hectograph slab held to the top face of the top wall of the inner box; said outer box and its cover being adapted to enclose said inner box and said slab thereon when the cover is closed.

9. A hectograph duplicator comprising an outer box; a box-like cover for the outer box hinged to the outer box; vertical partitions in the outer box dividing the outer box into storage compartments; an inner storage box having a top wall, a bottom wall, longitudinal side walls, an end wall and one open end; said inner box being hinged at one longitudinal side thereof to one longitudinal side wall of the outer box for seating of the bottom wall of the inner box on the tops of the partitions in the outer box; said partitions supporting the inner box with its open end completely accessible when the hinged cover of the outer box is opened; said inner box being swingable about its hinge axis, while said cover is open, to afford access to the storage compartments in the outer



box; and means for detachably holding a hectograph slab to the top face of the top wall of the inner box; said outer box and its cover being adapted to enclose the inner box and said slab-holding means when the cover is closed; and said inner box being provided with means for slidably supporting in said inner box in superposed and spaced relation a plurality of hectograph slabs for individual insertion and withdrawal of the slabs through the open end of the inner box while the cover of the outer box is swung open.

10. A hectograph duplicator comprising an outer box; a box-like cover for the outer box hinged to the outer box; vertical partitions in the outer box dividing the outer box into storage compartments; an inner storage box having a top wall, a bottom wall, longitudinal side walls, an end wall and one open end; said inner box being hinged

at one longitudinal side thereof to one longitudinal side wall of the outer box for seating of the bottom wall of the inner box on the tops of the partitions in the outer box; said partitions supporting the inner box with its open end completely accessible when the hinged cover of the outer box is opened; said inner box being swingable about its hinge axis, while said cover is open, to afford access to the storage compartments in the outer box; a hectograph slab held to the top face of the top wall of the inner box; said outer box and its cover being adapted to enclose said inner box and said slab thereon when the cover is closed; and means for latching the inner box to the outer box against hinge movement and with the inner box seated upon the tops of the partitions in the outer box.

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